cephalosporin and a macrolide to cover the usual pathogens of community-acquired pneumonia. Ribavirin was given if fever persisted. Steroid treatment with oral prednisolone, intravenous hydrocortisone, or methylprednisolone was given if patients continued to be febrile, their clinical condition deteriorated, or their chest radiographs showed progressive changes.

Patients were monitored with daily chest radiographs until there were consistent signs of resolution of pneumonic changes and the patients were afebrile. Blood tests were also repeated daily to monitor the progress of the disease, as well as the side effects of treatment, until the patient's condition stabilized.

The clinical, laboratory, and radiologic features were analyzed as mean ± SD. Univariate analysis was performed to compare patients younger than 12 yrs old and those 12 yrs and older with either chi-square or Mann-Whitney U tests. Probabilities were two-tailed. $p < .05$ was considered statistically significant.

RESULTS

Patients. During the study period, 19 children fulfilled the clinical diagnostic criteria of SARS. Two other children without fever but who had pneumonic changes in their chest radiographs were also included. These two children were members of a family of five, with three members fulfilling all the criteria for SARS. One of these two children did not have any symptoms. The other child had rhinorrhea only, but his nasopharyngeal aspirate was positive for coronavirus using RT-PCR.

There were ten boys and 11 girls, with a mean age of 10.7 ± 5.1 yrs (median, 12 yrs; range, 10 months–17 yrs). Eighteen of the 21 children lived in the housing estate. They came from 17 families; 13 of these families had other members affected by SARS. There was no history of traveling outside Hong Kong. All of the children were well previously and had not visited medical facilities or had contact with healthcare workers. Also, there had been no history of contact with birds or live poultry.

Clinical Features. Fever was the presenting symptom in 19 children. Other prodromal symptoms reported included malaise, loss of appetite, chills, dizziness, and rhinorrhea. Headache, myalgia, diarrhea, sore throat, and skin rash were relatively uncommon (Table 1). During the lower respiratory phase of the illness, approximately one half of the children had coughing, one third of which was productive. Dyspnea or tachypnea was uncommon. Only one child had crepitations on examination of the chest. The other 20 children did not have any adventitious sounds on chest examinations.

Laboratory Findings. At presentation, all children had normal hemoglobin values, except one child with thalassemic traits. The total white cell count was low in five children (23.8%). All neutrophil counts were normal. Twelve children (57.1%) had lymphopenia, and five (23.8%) had thrombocytopenia. Subsequently, during the course of the disease, 19 children (90.5%) developed lymphopenia and ten of them (47.6%) had mild thrombocytopenia. All elevated activated partial thromboplastin time levels during the acute phase in six children (28.6%) returned to normal levels subsequently. D-dimer was abnormal in three children (14.3%) (Table 2).

All children had normal renal function. Abnormal alanine transaminase (ALT) levels were found in two children (9.5%) at admission. Mild biochemical hepatitis, defined as an elevation three times that of a normal ALT level with a normal bilirubin level, was observed in five children (23.8%). Fifteen children (71.4%) had a raised lactic dehydrogenase (LDH) level, and nine children (42.9%) had a raised creatine phosphokinase (CPK) level (Table 2).

Most bacteriologic and virologic studies were unrevealing. Sputum specimens produced by three children were negative for bacterial culture. Nasopharyngeal aspirates for influenza A and B, adenovirus, parainfluenza virus, and respiratory syncytial virus were negative. Serological studies for mycoplasma, legionella, and chlamydia did not reveal any acute infections. Nasopharyngeal aspirate for RT-PCR for coronavirus was positive in three children (14.3%).

Table 1. Clinical features of children with severe acute respiratory syndrome

Features	No. of Children (%)
Fever	19 (90.5)
Malaise	13 (61.9)
Loss of appetite	12 (57.1)
Chills	10 (47.6)
Cough	9 (42.9)
Dizziness	8 (38.1)
Rhinorrhea	7 (33.3)
Sputum	3 (14.3)
Dyspnea/tachypnea	3 (14.3)
Headache	3 (14.3)
Myalgia	2 (9.5)
Diarrhea	2 (9.5)
Sore throat	1 (4.8)
Rash	1 (4.8)

Table 2. Laboratory features of children with severe acute respiratory syndrome

Variables	Mean ± SD	No. of Abnormal (%)
Hemoglobin, g/dL[a]		
Anemia[a]	12.6 ± 1.5	1 (4.8)
White cell count ($\times 10^{-9}$/L)[a]		
Leukopenia[a]	5.6 ± 1.6	5 (23.8)
Neutrophil count ($\times 10^{-9}$/L)[a]		
Neutrophilia[a]	3.5 ± 1.4	0 (0)
Lymphocyte count ($\times 10^{-9}$/L)[a]		
Lymphopenia[a]	1.5 ± 1.1	12 (57.1)
Lowest lymphocyte count ($\times 10^{-9}$/L)		
Lymphopenia	0.9 ± 0.7	19 (90.5)
Platelet count ($\times 10^{-9}$/L)[a]		
Thrombocytopenia[a]	190 ± 71	5 (23.8)
Lowest platelet count ($\times 10^{-9}$/L)		
Thrombocytopenia	148 ± 47	10 (47.6)
Prothrombin time, secs	11.4 ± 0.63	
Activated partial thromboplastin time, secs		
>40 secs	38.6 ± 6.9	6 (28.6)
Abnormal D-dimer, μg/mL		3 (14.3)
Urea, mmol/L	4.2 ± 1.0	
Creatinine, μmol/L	69 ± 15	
Alanine aminotransferase, IU/L[a]		
Deranged[a]	20 ± 15	2 (9.5)
Peak alanine aminotransferase, IU/L		
Elevation by three times	79 ± 99	5 (23.8)
Highest lactate dehydrogenase, IU/L		
Elevated	869 ± 333	15 (71.4)
Creatinine phosphokinase, IU/L		
Elevated	274 ± 280	9 (42.9)

[a]At admission.